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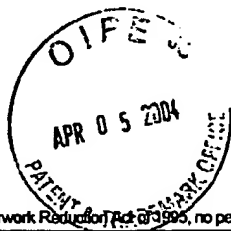
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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Complete if Known	
				Application Number	09/981,684
				Filing Date	Oct. 17, 2001
				First Named Inventor	Maria-Grazia Ascenzi
				Art Unit	1615
				Examiner Name	Not Yet Assigned
Sheet	1	of	4	Attorney Docket Number	04079/100H629-US2

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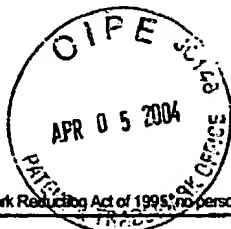
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FOREIGN PATENT DOCUMENTS						
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	1.	Amprino and Sisto (1946) "Analogies et differences de structure dans les differentes regions d'un meme os", <i>Acta Anatomica</i> , pg. 202-214	
	2.	Andreuzzi M. (2003) "Modelli di microstruttura ossea (compatta c umana) a variazione biologica. Tesi di Laurea in Matematica, Rome, Italy	
KRM	3.	Aoubiza et al. (1996) "On the mechanical characterization of compact bone structure using homogeneization theory", <i>J. Biomech.</i> 29:1539-1547	
KRM	4.	Ascenzi, A. et al., (1965) An electron microscope study of osteon calcification. <i>J. Ultr. Research.</i> , 12, 287-303	
KRM	5.	Boivin et al., (2000) "Alendronate Increases Bone Strength by Increasing the Mean Degree of Mineralization of Bone Tissue in Osteoporotic Women", <i>Bone</i> , 27:687-694	
KRM	6.	Bonucci, E. (2000) Basic composition and structure of bone. In: Mechanical testing of bone (An Y. and Draughn R. eds), CRC Press, Boca Raton, Florida, pg. 3-21	
KRM	7.	Borah et al., (2002) "Risedronate Preserves Trabecular Architecture and Increases Bone Strength in Vertebra of Ovariectomized Minipigs as Measured by Three-Dimensional Microcomputed Tomography", <i>Journal of Bone and Mineral Research</i> , 17:1139-1147	
KRM	8.	Bouxsein M. (2003) "Bone quality: where do we go from here?", <i>Osteoporos Int.</i> , 14(suppl 5):S118-S127	
KRM	9.	Boyde A, Hobdell M H (1969) Scanning electron microscopy of lamellar bone. <i>Z. Zellforsch</i> 93, 213-231	

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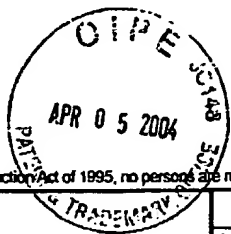
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NON PATENT LITERATURE DOCUMENTS			
KRM	10.	Burr and Hooser (1995) "Alterations to the En Bloc Basic Fuchsin Staining Protocol for the Demonstration of Microdamage Produced In Vivo", <i>Bone</i> , 17:431-433	
KRM	11.	Carter D. and Hays W C (1977) The compressive behavior of bone as a two-phase porous structure. <i>J. Bone Joint Surg.</i> 59, 954-962	
KRM	12.	Cowin, SC (1999) Bone poroelasticity. <i>J. Biomech.</i> 32, 217-238	
KRM	13.	Dufresne et al., (2003) "Risedronate Preserves Bone Architecture in Early Postmenopausal Women In 1 Year as Measured by Three-Dimensional Microcomputed Tomography", <i>Calcified Tissue International</i> , Springer-Verlag 2003 (electronic publication)	
—	14.	Ebner (v) V (1875) Ueber den feineren Bauder Knochensubstanz. Sitzber. Akad. Wiss. Wien III/72, 49-138	
KRM	15.	Engström A, Engfeldt B (1953) Lamellar structure of osteons demonstrated by microradiography. <i>Experientia</i> 9, 19	
—	16.	Frank R et al. (1955) L'os compact humain normal au microscope électronique. <i>Arch. Anat. Microsc. Morphol. Exp.</i> 44, 191-206	
—	17.	Frank R (1957) Contributions à l'étude au microscope électronique des tissus calcifiés normaux et pathologiques. Thèse de Doctorat en Médecine, Strasbourg, France, pp. 59-70	
KRM	18.	Frasca, P., Harper, R. and Katz, J. (1976) Isolation of single osteons and osteons lamellae. <i>Acta Anat.</i> , 95, 122-129	
KRM	19.	Hogan H A (1992) Micromechanics modeling of Haversian cortical bone properties. <i>J. Biomech.</i> 25, 549-556	
KRM	20.	Katz J L (1981) Composite material models for cortical bone. In <i>Mechanical Properties of Bone</i> (Edited by Cowin, SC), AMD, 45,171-184. American Society of Mechanical Engineers, New York	
KRM	21.	Kölliker A (1854) <i>Manual of Man Microscopical Anatomy</i> . Lippincott, Grambo and Co., Philadelphia	
KRM	22.	van Leeuwenhoek A (1693) An extract of a letter from Mr. Anth. Van. Leeuwenhoek containing several observations on the texture of the bones of animals compared with that of wood: on the bark of trees: on the little scales found on the cuticula, etc. <i>Philos. Trans. R. Soc. London</i> 202, 838-843	
KRM	23.	Marotti G (1979) Osteocyte orientation in human lamellar bone and its relevance to the morphology of periosteocytic lacunae. <i>Metab. Bone Dis & Rel. Res.</i> 1, 325-333	
KRM	24.	Martin B.M. (2003) "Fatigue Microdamage as an Essential Element of Bone Mechanics and Biology", <i>Calcif Tissue International</i> , 73:101-107	
KRM	25.	Michel, M. et al. (1993) Compressive fatigue behavior of bovine trabecular bone. <i>J. Biomech.</i> 26, 453-463	
KRM	26.	Mori et al., (1997) "Trabecular Bone Volume and Microdamage Accumulation in the Femoral Heads of Women With and Without Femoral Neck Fractures", <i>Bone</i> , 21:521-526	

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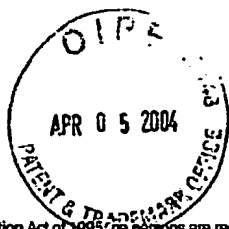
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NON PATENT LITERATURE DOCUMENTS		
K/M	27.	Reid S A (1986) A study of lamellar organization in juvenile and adult human bone. Anat. Embryol. 174, 329-338
K/M	28.	Saatcioglu, M. (1991) Modeling hysteretic force-deformation relationship for reinforced concrete elements. In: Earthquake-Resistant Concrete Structures, Inelastic Response and Design (S.K. Ghosh, ed.), American Concrete Institute (ACI-SP 127), Detroit, 153-198
K/M	29.	Schaffler, M.B. et al. (1990) Long-term fatigue behavior of compact bone at low strain magnitude and rate. Bone, 11, 321-326
K/M	30.	Schaffler et al., (1995) "Aging and Matrix Microdamage Accumulation in Human Compact Bone", Bone, 17:521-525
K/M	31.	Seireg, A. and Kempke, W. (1969) Behavior of in vivo bone under cyclic loading. J. Biomech., 2, 455-461
K/M	32.	Sevostianov and Kachanov (2000) "Impact of the porous microstructure on the overall elastic properties of the osteonal cortical bone", J. of Biomechanics, 33:881-888
K/M	33.	Smith J W (1960) The arrangement of collagen bundles in human secondary osteons. J. Bone Joint Surg. 42B, 588-605
—	34.	Vincent J (1957) Corrélation entre la microradiographie et l'image en lumière polarisée de l'os secondaire. Exp. Cell. Res. 12, 422-424
—	35.	Weindenreich F (1930) Das Knochengewebe. In: von Mollendor, (Ed.), Handbuch der mikroskopischen Anatomie des Menschen. Springer, Berlin, 391-520
—	36.	Ziegler D (1908) Studien über die feinere Struktur des Röhrenknochens und dessen Polarization. Dtsch. Z. Chir. 85, 248-262
K/M	37.	Bouxsein ML (2003) Bone quality: an old concept revisited, Osteop Int, 14: S1-S2
K/M	38.	Boyde A (1984) Methodology of calcified tissue specimen preparation for SEM. In: Methods of Calcified Tissue Preparation, Dickson GR editor, Elsevier, Amsterdam, 251-307
K/M	39.	Boyde A: What happens to cracks in bone? In: Proceedings of Bioengineering in Ireland (8) and the 16 th Meeting of the Northern Ireland Biomedical Engineering Society - Joint Conference 2002, Eds: FitzPatrick DP and McCormack BAO, Dublin: University College, 23
K/M	40.	Boyde A (2003) The real response of bone to exercise, J Anat, 203: 173-189
K/M	41.	Boyde A et al., (1983) Tandem scanning reflected light microscopy of internal features in whole bone and tooth samples, J Microsc, 132: 1-7
K/M	42.	Burr DB, Stafford T (1985) Validity of the bulk-staining technique to separate artifactual from in vivo fatigue microdamage, Clin. Ortho. And Related Research, 260:305-308
K/M	43.	Guo XE, et al., (1994) Finite Element Modeling of Damage Accumulation in Trabecular Bone Under Cyclic Loading, J Biomech, 27: 145-155

W:1040 Z91100		Date Considered	7/6/04
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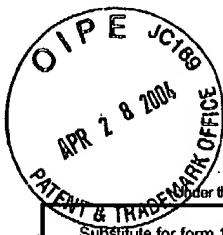
Technology Center 2100

NON PATENT LITERATURE DOCUMENTS		
KDM	44.	Martin RB, Burr DB (1982) A hypothetical mechanism for the stimulation of osteonal remodeling by fatigue damage, J Biomech, 15, 137-139
KDM	45.	Pauwels (1948) "The Principles of Construction of the Locomotor System. Their Significance for the Stressing of the Tubular Bones", Z. Anat. Entwickl. Gesch., 114:129-166
KDM	46.	Picard S et al., (2003) Micro-architectural strut analysis study on paediatric bone, Proceedings of the 25th annual meeting of the American Society of Bone and Mineral Research 2003, Minneapolis
KDM	47.	Zioupou P. (2001) "Accumulation of <i>in-vivo</i> , fatigue microdamage and its relation to biomechanical properties in ageing human cortical bone", J. of Microscopy, 201:270-278
—	48.	Ascenzi M.G. (2000) Cyclic torsional loading of longitudinal and alternate osteons", National Science Foundation Grant, n0075055
KDM	49.	Kino et al., (1995) "Intermediate Optics in Nipkow Disk Microscopes", Handbook of Biological Confocal Microscopy, ed. James B. Pawley, Plenum Press, New York, pg. 155-165
KDM	50.	Marotti et al., (1994) "Structure and Function of Lamellar Bone", Clinical rheumatology, 13(suppl. 1):63-68

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Application Number	09/981,684-Conf. #6620
Filing Date	October 17, 2001
First Named Inventor	Maria-Grazia Ascenzi
Art Unit	2123
Examiner Name	K. Thangavelu
Attorney Docket Number	04079/100H629-US2

U.S. PATENT DOCUMENTS

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KJW	BA	WO-02/33679 A2	04-24-2002	Maria-Grazia Ascenzi		
KJW	BB	WO-02/060347 A2	08-08-2002	Maria-Grazia Ascenzi et al.		

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KJW	CA	Ascenzi, A. and A. Benvenuti, "Orientation of Collagen Fibers at the Boundary Between Two Successive Osteonic Lamellae and its Mechanical Interpretation". J. Biomechanics. 19(6):455-463 (1986).	
KJW	CB	Ascenzi, A. et al., "An Approach to the Mechanical Properties of Single Osteonic Lamellae". J. Biomechanics 6:227-235 (1973).	

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KJM	CA	Ascenzi, et al., "Distribution of collagen bundle orientation in human secondary osteons", Scanning, Vol. 26, 2 (2004), pp. 90-91.	

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APPLICANT: ASCENZI, Maria-Grazia FILING DATE: October 17, 2001
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OTHER REFERENCES**(INCLUDING AUTHOR, TITLE DATE, PERTINENT PAGES, ETC.)**

*EXAMINER
INITIALS

- KJN 1. Ament, Ch. and Hofer, E.P., (2000) A fuzzy logical model of fracture healing. Journal of Biomechanics, 32:961-968
- KJN 2. Amprino, R. and Engström, A. (1952) Studies on X-ray absorption and diffraction of bone tissue. Acta Anat, 15, 1-22
- KJN 3. Antman, S. (1995) Nonlinear Problems of Elasticity. Springer. New York
- KJN 4. Ascenzi, M.-G. (2000) National Science Foundation grant description
- KJN 5. Ascenzi, M.-G., Benvenuti, A., and Ascenzi, A. (2000) Single osteon micromechanical testing. In: Mechanical testing of bone (An Y. and Draughn R. eds), CRC Press, Boca Raton, Florida
- KJN 6. Ascenzi, M.-G. (1999a) Evidence of macroscopic prestress in human femoral shaft, Abstracts of the XVIIth conference of the International Society of Biomechanics, Calgary
- KJN 7. Ascenzi, M.-G. (1999b) A first estimation of prestress in so-called circularly fibered osteonic lamellae, J. Biomech., 32, 935

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- KJN* 8. Ascenzi, M.-G. (1998a) A first estimate of prestress in so-called circularly fibered osteonic lamellae, Abstracts of the 11th conference of the European Society of Biomechanics, J. Biomech., 31, Suppl. I, 22.
- KJN* 9. Ascenzi, A., Benvenuti, A., Bigi, A., Foresti, E., Koch, M.H.J., Mango, F., Ripamonti, A., and Roveri, N. (1998) X-ray diffraction on cyclically loaded osteons. Calc. Tissue Int., 62:266-273
- KJN* 10. Ascenzi, A., Ascenzi M. G., Benvenuti, A., and Mango, F. (1997) Pinching in longitudinal and alternate osteons during cyclic loading. J. Biomechanics, 30, 689-695
- KJN* 11. Ascenzi, A., Baschieri P., and Benvenuti, A. (1994) The torsional properties of single selected osteons. J. Biomech., 27, 875-884
- KJN* 12. Ascenzi, A., Baschieri P., and Benvenuti, A. (1990) The bending properties of single osteons. J. Biomech., 23, 763-771
- KJN* 13. Ascenzi, A. (1988) The micromechanics versus the macromechanics of cortical bone - A comprehensive presentation. J. Biomech. Eng., 110, 357-363
- KJN* 14. Ascenzi, A., Boyde, A., Portigliatti-Barbos, M. and Carando, S. (1987a) Micro-biomechanics vs Macrobiomechanics in cortical bone. A micromechanical investigation of femurs deformed by bending. J. Biomech., 20, 1045-1053
- KJN* 15. Ascenzi, A., et al., (1986) Relationship between mechanical properties and structure in Secondary bone, Connective Tissue Research, 15:73-76
- KJN* 16. Ascenzi, A., Benvenuti, A., Mango, F. and Simili, R. (1985) Mechanical hysteresis loops from single osteons: Technical devices and preliminary results, J. Biomech., 18, 391-398

LIST OF REFERENCES CITED BY APPLICANT

(Use Several Sheets if Necessary)

DOCKET NO.: 3272/1H629US2 SERIAL NO: 09/981,684
APPLICANT: ASCENZI, Maria-Grazia FILING DATE: October 17, 2001
CONFIRMATION NO: 6620

***EXAMINER
INITIALS**

- KWR 17. Ascenzi, A. and Bonucci, E. (1972) The shearing properties of single osteons. Anat. Rec., 172, 499-510
- KWR 18. Ascenzi, A. and Bonucci, E. (1968) The compressive properties of single osteons. Anat. Rec., 161, 377-392
- KWR 19. Ascenzi, A. and Bonucci, E. (1967) The tensile properties of single osteons. Anat. Rec., 158, 375-386
- KWR 20. Ascenzi, A., et al., (1967) An Electron Microscope Study on Primary Periosteal Bone. J. Ultr. Research, 18:605-618
- KWR 21. Ascenzi, A. and Bell, G.H., (1956) Bone as a mechanical engineering problem. In: The Biochemistry and Physiology of Bone (Bourne G. H. ed) Academic Press, New York
- KWR 22. Boyde, A., Bianco, P., Portigliatti-Barbos, M. and Ascenzi, A. (1984) Collagen Orientation in compact bone: 1. A new method for the determination of the proportion of collagen parallel to the plane of compact bone sections, Metab. Bone Dis. & Rel. Res., 5, 299-307.
- KWR 23. Burr, D.B., Schaffler, M.B. and Frederickson, R.G. (1988) Composition of the cement line and its possible mechanical role as a local interface in human compact bone. J. Biomech., 21, 939-945
- KWR 24. Caler, W.E. and Carter, D.R. (1989) Bone creep-fatigue damage accumulation. J. Biomech., 22, 625-635
- KWR 25. Carter, D.R., Caler, W.E., Spengler, D. M., and Frankel, V. H. (1981), Fatigue behavior of adult cortical bone: The influence of mean strain and strain range., Acta Orthop. Scand., 52, 481-490
- KWR 26. Carter, D.R. and Spengler, D.M. (1978) Mechanical properties and composition of cortical bone. Clin. Orthop., 135,192-217

LIST OF REFERENCES CITED BY APPLICANT

(Use Several Sheets if Necessary)

DOCKET NO.: 3272/1H629US2 SERIAL NO: 09/981,684
APPLICANT: ASCENZI, Maria-Grazia FILING DATE: October 17, 2001
CONFIRMATION NO: 6620

***EXAMINER
INITIALS**

- KWR 27. Carter, D.R. and Hayes, W.C. (1977) Compact bone fatigue damage - I. Residual strength and stiffness. J. Biomech., 10, 325-337.
- KWR 28. Carter, D.R. and Hayes, W.C. (1976) Fatigue life of compact bone - I. Effects of stress amplitude, temperature and density. J. Biomech., 9, 27-34.
- KWR 29. Carter, D.R., Hayes, W.C. and Schurman, D.J. (1976) Fatigue life of compact bone - II Effects of microstructure and density. J. Biomech., 9, 211-218.
- KWR 30. Cook, J. and Gordon, J. E. (1964) A mechanism for the control of crack propagation in all brittle systems. Proc. R. Soc. Lond., Ser. A, 282, 508-520.
- KWR 31. Couteau, B., Payan, Y., Lavallée, S. (2000) The mesh-matching algorithm: an automatic 3D mesh generator for finite element structures. J. Biomech., 33, 1005-1009.
- KWR 32. Crolet J.-M., Aoubiza, B. and Meunier, A. (1993) Compact bone: numerical simulation of mechanical characteristics. J. Biomech., 26, 677-687.
- KWR 33. Currey, J.D. (1964) Three analogies to explain the mechanical properties of bone. Biorheology, 2:1-10
- KWR 34. Currey, J.D. (1959) Differences in tensile strength of bone of different histological types. J. Anat., 93, 87-95.
- KWR 35. Evans, P. (1978) Relations between torsion properties and histology of adult human compact bone. J. Biomech., 11, 157-165
- KWR 36. Evans, F.G. and Vincentelli, R. (1969) Relation of collagen fiber orientation to some mechanical properties of human cortical bone. J. Biomech., 2, 63-71

LIST OF REFERENCES CITED BY APPLICANT

(Use Several Sheets if Necessary)

DOCKET NO.: 3272/1H629US2 SERIAL NO: 09/981,684
APPLICANT: ASCENZI, Maria-Grazia FILING DATE: October 17, 2001
CONFIRMATION NO: 6620

***EXAMINER
INITIALS**

- KAN 37. Frasca, P., Harper, R. and Katz, J. (1981) Strain and frequency dependence of shear storage modulus for human single osteons and cortical bone microsamples-size and hydration effects. J. Biomech, 14, 679-690
- KAN 38. Frasca, P., Harper, R. and Katz, J. (1977) Collagen fiber orientation in human secondary osteons. Acta Anat., 98, 1-13.
- 39. Gebhardt, W., (1905) Ueber funktionell wichtige Anordnungsweisen der feineren und gröberen Bauelemente des Wirbeltierknochens. II. Spezieller Teil. I. Der Bau der Haverssohen Lamellensysteme und seine funktionelle Bedeutung. Arch. Entwickl. Mech Org., 20, 187-3220
- KAN 40. Giraud-Guille, M. M. (1988) Twisted plywood architecture of collagen fibrils in human compact bone osteons. Calc. Tissue Int., 42, 167-180.
- KAN 41. Gupta, V., and Bergström, J.S. (1998) Compressive failure of rocks by shear faulting. J. of Geoph. Res. 103, 23, 875-23,895.
- KAN 42. Hart, R.T., et al., (1992) Modeling the biomechanics of the mandible: a three-dimensional finite element study. J. Biomechanics, 25(3):261-286
- KAN 43. Hert J., Fiala P. and Petrtyl M. (1994) Osteon orientation of the diaphysis of the long bones in man. Bone, 15, 269-277.
- KAN 44. Hayes, W. and Carter, D. (1979) Biomechanics of Bone. In: Skeleton Research: An Experimental Approach (D. Simmons and A. Kunin, eds.), Academic Press Inc., New York, 1, 263-299.

LIST OF REFERENCES CITED BY APPLICANT

(Use Several Sheets if Necessary)

DOCKET NO.: 3272/1H629US2 SERIAL NO: 09/981,684
APPLICANT: ASCENZI, Maria-Grazia FILING DATE: October 17, 2001
CONFIRMATION NO: 6620

***EXAMINER
INITIALS**

- KJN 45. Höhling, H.J., Barckhaus, R.H., Krefting, E.R., Althoff, J. and Quint, P. (1990) Collagen mineralization: aspects of the structural relationship between collagen and apatite crystallites. In: Ultrastructure of Skeletal Tissues: Bone and Cartilage in Health and Disease (E. Bonucci and P.M. Morra, eds.), Kluwer Academic Publishers, Boston, 41-62.
- KJN 46. Huja, S.S., Hasan, M.S., Pidaparti, R., Turner, C.H., Garetto, L.P. and Burr, D. (1999) Development of a fluorescent light technique for evaluating microdamage in bone subjected to fatigue loading. J. Biomech., 32, 1243-1249.
- KJN 47. Jepsen, K. J. and Davy, D.T. (1997) Comparison of damage accumulation measures in human cortical bone. J. Biomech., 30, 891-894.
- KJN 48. Jepsen, K. J., Davy, D.T. and Krzyrow, D. J. (1999) The role of the lamellar interface during torsional yielding of human cortical bone. J. Biomech., 32, 303-310.
- KJN 49. Katz, J. L. and Meunier, A. (1987) The elastic anisotropy of bone. J. Biomech., 20, 1063-1070.
- KJN 50. Katz, J. L. and Ukraincik, K. (1971) On the anisotropic elastic properties of hydroxyapatite. J. Biomech., 4, 221-227.
- KJN 51. Kleerekoper, M., Villanueva, A. R., Stanciu, J., et al. (1985) The role of three-dimensional trabecular microstructure in the pathogenesis of vertebral compression fractures. Calc. Tissue. Int., 37, 594-597.
- KJN 52. Koch, J. C. (1917) The laws of bone architecture. Am. J. Anat., 21, 177-293.
- KJN 53. Lakes, R. (1995) On the torsional properties of single osteons, J. Biomech., 28, 1409-1410.
- KJN 54. Mah, J. and Hatcher, D. (2000) Imaging trends and applications for the millenium. Orthod. Prod., 1, 14-18.

LIST OF REFERENCES CITED BY APPLICANT

(Use Several Sheets if Necessary)

RECEIVED

NOV 19 2002

DOCKET NO.: 3272/1H629US2

SERIAL NO:

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APPLICANT: ASCENZI, Maria-Grazia

FILING DATE:

October 17, 2001

CONFIRMATION NO: 6620

*EXAMINER
INITIALS

KAN 55. Martens, M., van Audekercke, R., de Meester, P. and Mulier, J. (1980) The mechanical characteristics of the long bones of the lower extremity in torsional loading. J. Biomech., 13, 667-676.

KAN 56. Miller, G. and Piotrowski, G. (1974) A brief note on the variability of the torsional strength of paired bones. J. Biomechanics, 7, 247-248.

KAN 57. Moreland, M. (1980) Morphological effects of torsion applied to growing bone. J. Bone Jt. Surg., 62-B, 230-237.

KAN 58. Philipson, B. (1965) Composition of cement lines in bone. J. Histochem. Cytochem., 13, 270-281.

KAN 59. Pidaparti, R. and Burr D. (1992) Collagen fiber orientation and geometry effects on the mechanical properties of secondary osteons. J. Biomech., 25, 869-880.

KAN 60. Piekarski, K. (1970) Fracture of bone. J. of Appl. Physics, 41, 215-223.

KAN 61. Portigliatti-Barbos, M., Bianco, P. and Ascenzi, A. (1983) Distribution of osteonic and interstitial components in the human femoral shaft with reference to structure, calcification, and mechanical properties. Acta Anat., 115, 178-186.

KAN 62. Portigliatti-Barbos, M., Bianco, P., Ascenzi, A. and Boyde, A. (1984) Collagen orientation in compact bone: II. Distribution of lamellae in the whole of the human femoral shaft with reference to its mechanical properties. Metab. Bone Dis. & Rel. Res., 5, 309-315.

KAN 63. Portigliatti-Barbos, M., Carando, S., Ascenzi, A. and Boyde, A. (1987) On the structural symmetry of human femurs, Bone, 8, 165-169.

LIST OF REFERENCES CITED BY APPLICANT

(Use Several Sheets if Necessary)

DOCKET NO.: 3272/1H629US2 SERIAL NO: 09/981,684
APPLICANT: ASCENZI, Maria-Grazia FILING DATE: October 17, 2001
CONFIRMATION NO: 6620

***EXAMINER
INITIALS**

- KAN* 64. Rho, J.Y., Zioupos, P., Currey, J.D., and Pharr, G. M. (1999) Variations in the individual thick lamellar properties within osteons by nanoindentation, Bone, 25, 295-300.
- KAN* 65. Riggs, C. M., Lanyon, L. E., and Boyde, A. (1993a) Functional associations between collagen fibre orientation and locomotor strain direction in cortical bone of the equine radius, Anat. Embryol., 187, 231-238.
- KAN* 66. Riggs, C. M., Vaughan, L. C., Evans, G. P., Lanyon, L. E. and Boyde, A. (1993b) Mechanical implications of collagen fibre orientation in cortical bone of the equine radius, Anat. Embryol., 187, 239-248.
- KAN* 67. Sasaki N. (2000) Viscoelastic properties of bone and testing methods. In: Mechanical testing of bone (An Y. and Draughn R. eds), CRC Press, Boca Raton, Florida.
- KAN* 68. Schaffler, M., Burr, D. B. and Frederickson, R. G. (1987) Morphology of the osteonal cement line in human bone. Anat. Rec., 217, 223-228.
- KAN* 69. Shiga, T., Ogawa, J., Shibata, A. and Shibuya, J. (1970) The dynamic properties of reinforced concrete frames. Proceedings of the United States-Japan Seminar on Earthquake Engineering with emphasis on safety of school buildings. September, 346-363.
- KAN* 70. Simkin, A., and Robin, G. (1974) Fracture formation in differing collagen fiber pattern of compact bone. J. Biomech., 7, 183-188.

LIST OF REFERENCES CITED BY APPLICANT

(Use Several Sheets if Necessary)

DOCKET NO.: 3272/1H629US2 SERIAL NO: 09/981,684
APPLICANT: ASCENZI, Maria-Grazia FILING DATE: October 17, 2001
CONFIRMATION NO: 6620

***EXAMINER
INITIALS**KW

71. Vincentelli, R. and Evans, F. G. (1971) Relations among mechanical properties, collagen fibers, and calcification in adult human cortical bone. J. Biomech., 4, 193-201.

KW

72. Ziv, V., Wagner, M. D., and Weiner, S. (1996) Microstructure-microhardness relations in parallel-fibered and lamellar bone. Bone, 18, 417-428.

KW

73. Zysset, P.K., Guo X.E., Hoffler C.E., Moore K.E., and Goldstein S. (1999) Elastic modulus and hardness of cortical and trabecular bone lamellae measured by nanoindentation in the human femur. J. Biomech., 32, 1005-1012.

EXAMINER:

KW

DATE CONSIDERED:

7/6/04***EXAMINER:**

Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



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APPLICANT: ASCENZI, Maria-Grazia FILING DATE: October 17, 2001
CONFIRMATION NO: 6620

U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

*EXAMINER INITIALS	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES
-----------------------	--------------------	------	---------	-------	----------	--------------------

OTHER REFERENCES**(INCLUDING AUTHOR, TITLE DATE, PERTINENT PAGES, ETC.)**

*EXAMINER
INITIALS

- KAN 1. An, Y., et al., (2000) Basic Concepts of Mechanical Property Measurement and Bone Biomechanics. Mechanical Testing of bone and the Bone-Implant Interface, Chapter 2, pp. 23-40
- KAN 2. Ascenzi, A., and Boyde, A., (1993) Micromechanical aspects of normal and deformed cortical bone. In: Micromovement in Orthopaedics. A.R. Turner-Smith ed., Chapter 21, pp. 185-198. Oxford Medical Engineering Series 10, Medical Publications. Clarendon Press, Oxford.
- KAN 3. Ascenzi, A., et al., (1987b) Distribution of Lamellae in Human Femoral Shafts Deformed by Bending with Interferences on Mechanical Properties. Bone, 8:319-325
- KAN 4. Ascenzi, A., and Benvenuti, A., (1980) Evidence of a state of initial stress in osteonic lamellae. Acta Orthop. Belg., 46:580-583
- KAN 5. Ascenzi, A., et al., (1965) The tensile properties of single osteons studied using a microwave extensimeter. In: Studies on the Anatomy and Function of Bone and Joints. F.G. Evans ed., pp. 121-141, Springer-Verlag, Berlin.

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SHEET 2 OF 2
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DOCKET NO.: 4079/1H629US2 SERIAL NO: 09/981,684
APPLICANT: ASCENZI, Maria-Grazia FILING DATE: October 17, 2001
CONFIRMATION NO: 6620

***EXAMINER
INITIALS**

KSN 6. Carando, S., et al., (1991) Macroscopic shape of, and lamellar distribution within, the upper limb shafts, allowing interferences about mechanical properties. Bone, 12:265-269

KSN 7. Carando, S., (1989) Orientation of collagen in human tibial and fibular shaft and possible correlation with mechanical properties. Bone, 10:139-142

KSN 8. Currey, J.D. (1969) The relationship between the stiffness and the mineral content of bone. J. Biomechanics, 2:477-480

KSN 9. Marotti, G., et al., (1994) Structure and function of lamellar bone. Clinical Rheumatology, 13(1):63-68

KSN 10. McCutchen, C.W., (1975) Do mineral crystals stiffen bone by straitjacketing its collagen? J. Theor. Biol., 51:51-58

EXAMINER:

KSN

DATE CONSIDERED:

*7/6/04****EXAMINER:**

Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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